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REMARKS

Applicant notes with appreciation the indication of allowable subject matter contained in claims 4, 7, 12, and 13. But it is believed that the foregoing amendments to independent claim 1 render allowable both that claim as amended as well as each of the dependent claims.

Claim 1 has been amended to more particularly point out and more distinctly claim the subject matter that the applicant regards as his invention. In that regard, claim 1 has been amended to recite that the support disc supports electrical heating elements for an electrically heated industrial furnace. It has also been amended to recite that at least one elongated opening serves to reduce thermal stresses within the disc and to reduce thermally induced disc cracking.

Claims 1-3, 5, 6, and 8-11 were rejected as obvious based upon the disclosure contained in the Kinney '546 reference. The Kinney reference relates to an immersion electric heater and not to an electrical heating element for an industrial furnace. A typical use of the Kinney heater is for heating high viscosity materials within a tank (see Kinney, Fig 1) so that they flow more easily for pumping, spraying, and the like (see Kinney, col. 1, lines 17-20). But the temperatures that are needed for heating high viscosity materials to a temperature to render them more flowable, temperature of the order of a few hundred degrees, do not even remotely approach the very high temperatures that are encountered in industrial furnaces, which are typically in excess of about 1300°C. Thus, one of ordinary skill in the art and faced with a support disc

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cracking problem within an industrial furnace would not consider the Kinney reference to be at all relevant because of the low operating temperatures that are involved in heating materials to a flowable condition.

In addition to relating to completely different operating conditions, the Kinney reference does not disclose the problem of overcoming thermal stresses in support discs, nor does it even mention cracking of such support discs, clearly because of the low temperatures involved in the problem to which the Kinney reference relates.

Moreover, the purpose of Kinney's radial slots 45 is merely to provide access to allow the resistance wires 48 to be positioned in respective inner openings 44 (see Kinney, col. 2, lines 55-60). Kinney's slots 45 do not serve to reduce ceramic block cracking that is induced by thermal stresses, because of the much lower temperatures involved — they serve merely to facilitate insertion of the resistance wires into the inner openings. Kinney thus provides no teaching or suggestion of a solution to a disc cracking problem, and therefore one of ordinary skill in the art would not be led to the Kinney reference for a solution to that problem.

Further, because of the disclosed purpose of Kinney's slots 45, the Kinney reference requires that each opening 44 includes a corresponding slot 45, for otherwise the wires 48 would not be received within openings 44 in the manner taught by Kinney. In the invention as claimed in claim 1, on the other hand, there are fewer elongated openings than there are intermediate apertures, which is a significant difference between the claimed invention and the Kinney disclosure.

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Finally, amended claim 1 includes functional distinctions over the Kinney disclosure, and those functional distinctions must be given weight in a patentability analysis. That functional limitations must be considered and cannot be ignored was set forth by the former Board of Patent Appeals as follows:

Although we have sustained several of the Examiner's rejections we here wish to specifically note that contrary to the Examiner's assertions, functional language in the claims must be given full weight and may not be disregarded in evaluating the patentability of the subject matter defined employing such functional language. However, the applicant must establish that what is taught by the reference does not inherently function in the same manner required by the claim; cf. *In re Hallman* decided by the CCPA July 16, 1981, 655 F.2d 212, 210 U.S.P.Q. 609.

*Ex parte Bylund*, 217 U.S.P.Q. 492, 498 (Bd. App. 1981).

And the Federal Circuit has held to the same effect. *K2 Corp. v. Salomon S.A.*, 52 U.S.P.Q.2d 1001, 1004 (Fed. Cir. 1999) ("The functional language is, of course, an additional limitation in the claim."). Thus, the functional recitation contained in amended claim 1 regarding thermal stresses, must be considered, and because it is neither disclosed nor even remotely suggested in the Kinney reference, amended claim 1 is clearly patentably distinguishable over the Kinney reference.

Claims 2-13 each depend directly from claim 1, and therefore the same distinctions as are noted above in connection with claim 1 apply with equal effect to those dependent claims. Further, the dependent claims contain additional recitations that further distinguish the invention as so claimed from the teachings of the references relied upon.

Based upon the foregoing amendments and remarks, the claims as they now stand in the application are believed clearly to be allowable in that they

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patently distinguish over the disclosure contained in the Kinney reference that was cited and relied upon by the examiner. Consequently, this application is believed to be in condition for allowance, and reconsideration and reexamination of the application is respectfully requested with a view toward the issuance of an early Notice of Allowance.

The examiner is cordially invited to telephone the undersigned attorney if this amendment raises any questions, so that any such question can be quickly resolved in order that the present application can proceed toward allowance.

Respectfully submitted,



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